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| EXAMINER |
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SMITH, JEFFREY S

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2624

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05/03/2007

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

## Office Action Summary

Application No.

10/817,476

Applicant(s)

OLDROYD, LAWRENCE A.

Examiner

Jeffrey S. Smith

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 02 April 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-25 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-25 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 02 April 2004 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date 8/04.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_.

## **DETAILED ACTION**

### ***Requirement For Information***

Applicant and the assignee of this application are required under 37 CFR 1.105 to provide the following information that the examiner has determined is reasonably necessary to the examination of this application. The information is required to document the level of skill and knowledge in the art of automatic image registration, because each art cited in the information disclosure statement ("cited prior art") appears to contain all of the claimed subject matter.

In response to this requirement, please state whether any of the cited prior art discloses generating a sensor image of a first scene mounted on a platform. If so, please provide the page, column and line number for each cited prior art that discloses generating a sensor image of a first scene mounted on a platform.

Please state whether any of the cited prior art discloses accessing a reference image of a second scene, the reference image encompassing the sensor image. If so, provide the page, column and line number for each cited prior art that discloses accessing a reference image of a second scene, the reference image encompassing the sensor image.

Please state whether any of the cited prior art discloses identifying the portion of the reference image depicted in the sensor image. If so, provide the page, column and line number for each cited prior art that discloses identifying the portion of the reference image depicted in the sensor image.

Please state whether any of the cited prior art discloses defining an area of the reference image based on the reference image portion. If so, provide the page, column and line number for each cited prior art that discloses defining an area of the reference image based on the reference image portion.

Please state whether any of the cited prior art discloses conforming the sensor image and the reference image area to a common perspective by transforming the perspective of at least one of the sensed image and the reference image area. If so, provide the page, column and line number for each cited prior art that discloses conforming the sensor image and the reference image area to a common perspective by transforming the perspective of at least one of the sensed image and the reference image area.

Please state whether any of the cited prior art discloses matching images of common perspective. If so, provide the page, column and line number for each cited prior art that discloses matching images of common perspective.

In response to this requirement, please state the specific improvements of the subject matter in claims 1-25 over the disclosed prior art and indicate the specific elements in the claimed subject matter that provide those improvements. For those claims expressed as means or steps plus function, please provide the specific page and line numbers within the disclosure which describe the claimed structure and acts.

This information is material to patentability. Applicant is reminded that failure to fully reply to this requirement for information will result in a holding of abandonment. This requirement is an attachment of the enclosed Office action. A complete reply to

the enclosed Office action must include a complete reply to this requirement. The time period for reply to this requirement coincides with the time period for reply to the enclosed Office action.

### ***Drawings***

The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the methods of claims 1-25 must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner,

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the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

***Claim Rejections - 35 USC § 112***

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

For claims 3 and 17, the meaning of the phrase "different internal geometry" is unclear and is not defined by the disclosure as filed. One of skill in the art is unable to make and use a sensor image and a reference image of different internal geometry.

For claims 7 and 21, a description of enhancing the fidelity of the transformed image using a 3-D surface model of the scene is not in the disclosure as originally filed. This claim element is copied into the summary, which fails to satisfy the enablement requirement.

For claims 8 and 22, a description of the geometric transforming functions, functions representing said translation offset, and the step of combining geometric transforming functions and functions representing said translation offset are not in the

disclosure as originally filed. This claim element is copied into the summary, which fails to satisfy the enablement requirement.

For claims 9, 16 and 23, a description of determining geocoded locations in the sensor image corresponding to the geocoding of said locations in the reference image is missing from the disclosure as originally filed. This claim element is copied into the summary, which fails to satisfy the enablement requirement.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

For claims 3 and 17, the meaning of the phrase "different internal geometry" is unclear and is not defined by the disclosure as filed. One of skill in the art is unable to make and use a sensor image and a reference image of different internal geometry.

For claim 5, the sensed image lacks antecedent basis.

For claim 12, the reference chip lacks antecedent basis.

For claim 21, this claim is identical to claim 7.

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

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A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-4, 8, 10-11, 13-15, 17-18, 22, and 24-25 are rejected under 35

U.S.C. 102(b) as being anticipated by U.S. Patent Number 5,809,171 issued to Neff et al. ("Neff").

Neff discloses claim 1, "generating a sensor image of a first scene with a sensor mounted on a platform" (The test image is captured with synthetic aperture radar. Col. 9 lines 12-14), "accessing a reference image of a second scene, said reference image encompassing said sensor image" (As illustrated in figure 1, the image correlation apparatus includes a template memory means for storing the template), "identifying the portion of the reference image depicted in the sensor image" (As shown in figure 7, the determining means determines labels in the reference image that are present in the sensor image), "defining an area of the reference image based on said reference image portion" (figure 7 shows an area of the reference image that is defined based on said reference image portion), "conforming said sensor image and said reference image area to a common perspective by transforming the perspective of at least one of said sensed image and said reference image area" (The test image and the reference image from which the template is constructed are oftentimes obtained from different viewpoints, such as from different angles and/or from different directions. In order to at least partially compensate for the differences between the first and second viewpoints, the image processor which forms the template generator means can geometrically warp the template. Col. 16 lines 16-57), and "matching said images of common perspective"



(The image processing method and apparatus matches (correlates) the test image with the template. See for example the title and abstract).

For claim 2, "said reference image is geocoded" (For example, in missile guidance applications, the template and test image are images of the terrain or landscape at a predetermined location. Col. 2 lines 21-44).

For claim 3, "the sensor image and reference image are of different internal geometry" (see for example figure 8).

For claim 4, the perspective of the reference image area is transformed to substantially the perspective of the sensor image (Col. 16 lines 16-57).

For claim 8, the matching step comprises determining the translation offset between the images of common perspective, and mapping locations in at least one of said sensor image and reference image by combining geometric transforming functions and functions representing said translation offset (see figure 11 and corresponding discussion in the detailed description).

For claim 10, the transforming step comprises removing perspective distortion from said reference image area to produce a substantially orthographic image of said area (see figure 11 and col. 16).

For claim 11, the removing step comprises performing an inverse perspective transform to remove said perspective distortion (see figure 11 and col. 16).

For claim 13, Neff discloses generating a first image of a first scene; generating a second image of a second scene, said second image encompassing said first image;

defining at least a portion of said second image depicting at least a portion of said first image; conforming said first and second image portions to a common perspective; and matching said image portions of common perspective (see figure 1).

For claim 14, Neff discloses at least a portion of said second image defined to depict at least a portion of said first image is less than the entire second image (see figures 7 and 11).

For claim 15, Neff discloses defining at least a portion of said second image that depicts substantially the entirety of said first image (see figures 7 and 11).

For claim 17, the first image portion and second image portion are of different internal geometry (see figure 8).

For claim 18, the perspective of said second image portion is transformed to substantially the perspective of the first image portion (see figure 11 and col. 16).

For claim 22, Neff discloses determining any translation offset between the image portions of common perspective; and mapping locations in at least one of said first image portion and reference image portion by combining geometric transforming functions and functions representing said translation offset (see figure 11).

For claim 24, Neff discloses removing perspective distortion from said second image portion to produce a substantially orthographic image of said second image portion (see figure 11).

For claim 25, Neff discloses performing an inverse perspective transform to remove said perspective distortion (see figure 11).

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 5-7, 9, 16, 19-21 and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Neff in view of U.S. Patent Number 5,550,937 issued to Bell et al. ("Bell").

Neff discloses the elements of base claim 1.

For claim 5, Bell discloses the perspective of the sensed image is transformed to substantially the perspective of the reference image area as shown in figure 5 (when image 21 is the sensed image and image 31 is the reference image).

It would have been obvious to one of ordinary skill in the art at the time of invention to transform the perspective of the sensed image to the perspective of the reference image area, because Neff teaches that, as known to those skilled in the art, the geometric warping of an image is typically performed by means of transformation viewpoint equations that are implemented by an image processor at col. 16, and one of ordinary skill in the art at the time of invention would realize that using the transformation equations to transform the reference image to the sensor image, or vice versa, would produce two images having the same perspective, as shown by Bell, who teaches that the transformation equations can be used to transform a sensor to a reference image.

For claim 6, Bell discloses that both the sensor image and the reference image area are transformed to a common perspective (see figure 7).

For claim 7, the transforming step enhances the fidelity of the transformed image using a 3-D surface model of the scene (see figure 9).

For claim 9, the mapping step comprises determining geocoded locations in the sensor image corresponding to the geocoding of said locations in the reference image (see for example figure 1 which shows geocoded images).

For claim 16, Neff discloses the elements of base claim 13. Bell discloses determining geocoded locations in the first image corresponding to the geocoding of the second image (see figure 5).

For claim 19, Bell discloses the perspective of the first image portion is transformed to substantially the perspective of the second image portion (see figure 5).

For claim 20, both the first image portion and the second image portion are transformed to a common perspective (see figure 7).

For claim 21, the transforming step further comprises the step of enhancing the fidelity of the transformed image using a 3-D surface model of the scene (see figure 9).

For claim 23, one of said first and second image portions is geocoded, said mapping step further comprising the step of: determining geocoded scene locations in the other of said image portions corresponding to the geocoding of the scene locations of said one image portion (see figure 5).

Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Neff in view of Bell, and further in view of common knowledge in the art.

For claim 12, Neff discloses matching images by considering the angle and direction by which the images were obtained. Bell discloses matching images by considering the collection geometries of the image collection sources. Although Neff and Bell do not explicitly disclose the transforming step comprises aligning the reference chip with the azimuth direction of the sensor, it would have been obvious to a person of ordinary skill in the art at the time of invention to align the reference chip with the azimuth direction of the sensor. Applicant has not disclosed that aligning the reference chip with the azimuth direction of the sensor provides an advantage, is used for a particular purpose or solves a stated problem that is not provided, used, nor solved by Neff and Bell. One of ordinary skill in the art, furthermore, would have expected Applicant's invention to perform equally well with the transformations that consider the angle and direction by which the images were obtained, and the collection geometries of the image collection sources as taught by Neff and Bell, because these transformations perform the same function as aligning the reference chip with the azimuth direction of the sensor, in the same way to achieve the same result, which is generating images that have a common perspective.

Therefore, it would have been obvious to combine to one of ordinary skill in this art to modify the transformations that consider the angle, direction, and collection geometries of Neff and Bell with the azimuth direction to obtain the invention as specified in claim 12.

### ***Double Patenting***

A rejection based on double patenting of the "same invention" type finds its support in the language of 35 U.S.C. 101 which states that "whoever invents or discovers any new and useful process ... may obtain a patent therefor ..." (Emphasis added). Thus, the term "same invention," in this context, means an invention drawn to identical subject matter. See *Miller v. Eagle Mfg. Co.*, 151 U.S. 186 (1894); *In re Ockert*, 245 F.2d 467, 114 USPQ 330 (CCPA 1957); and *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970).

A statutory type (35 U.S.C. 101) double patenting rejection can be overcome by canceling or amending the conflicting claims so they are no longer coextensive in scope. The filing of a terminal disclaimer cannot overcome a double patenting rejection based upon 35 U.S.C. 101.

Claims 1-7 are provisionally rejected under 35 U.S.C. 101 as claiming the same invention as that of claims 14-20 of copending Application No. 11/382,523. This is a provisional double patenting rejection since the conflicting claims have not in fact been patented.

Although the preamble of claim 14 in the copending application includes "implemented by a computer having memory and at least one processor," claims 1-7 of this application are still identical to claims 14-20 of the copending application. The preamble limitation of claim 14 is not given patentable weight because it does not breathe life and meaning into the body of the claim. Furthermore, the method of claim 1 of this application has to be implemented by a computer having a memory and at least one processor, because the disclosure allows for no other way to perform the method.

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent

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and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 8-25 are provisionally rejected on the ground of nonstatutory double patenting over claims 1-20 of copending Application No. 11/382,523. This is a provisional double patenting rejection since the conflicting claims have not yet been patented.

The subject matter claimed in the instant application is fully disclosed in the referenced copending application and would be covered by any patent granted on that copending application since the referenced copending application and the instant application are claiming common subject matter, as follows: the system claims 1-12 in the copending application contain the same elements as method claims 1-25 of this application, except in system form. One of skill in the art knows how to implement a method of claims 1-25 of this application because the elements of the system of the copending application perform the functions of the method claimed in this application. Also, claims 13-25 of this application are broader versions of claims 1-20 of the

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copending application. One of skill in the art knows how to perform the broader method of claims 13-25 using the functions performed by claims 1-20 of the copending application.

Furthermore, there is no apparent reason why applicant would be prevented from presenting claims corresponding to those of the instant application in the other copending application. See *In re Schneller*, 397 F.2d 350, 158 USPQ 210 (CCPA 1968). See also MPEP § 804.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jeffrey S. Smith whose telephone number is 571 270-1235. The examiner can normally be reached on M-F.


If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jingge Wu can be reached on 571 272-7429. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.



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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

JSS  
April 26, 2007



JINGGE WU  
SUPERVISORY PATENT EXAMINER